

Serial # 09/744,374

- 27 -

## CLAIMS

1. A system for synchronising video and audio signals transmitted over a link between a first point and a second point, the system comprising:

- 5           a. for use at said first point:
- i. video generating means for generating a video test signal having a first active picture period of a first state and a second active picture period of a second state which contrasts with said first state;
  - 10           ii. audio generating means for generating an audio test signal having a first period of a first state and a second period of a second state which contrasts with said first state, said second periods of said audio and video test signals having a predetermined time relationship such that each said second period of said audio test signal is associated with a respective said second period of said video test signal, to make a respective pair of associated video and audio signals;
  - 15           iii. video output means for outputting over said link a video output signal comprising said video test signal; and
  - 20           iv. audio output means for outputting over said link an audio output signal comprising said audio test signal; and
- 25           b. for use at said second point:
- i. video input means for receiving said video output signal output over said link by said video output means;

- 28 -

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- ii. audio input means for receiving said audio output signal output over said link by said audio output means;
  - iii. a video timing signal generator arranged to receive from said video input means said received video output signal and generate therefrom gating signals which represent active picture periods in said received video output signal;
  - iv. video detection means for receiving said received video output signal, detecting when said video test signal in said received video output signal changes to said second state, and outputting a video timing signal when said video test signal in said received video output signal changes to said second state;
  - v. audio detection means for receiving said received audio output signal, detecting when said audio test signal in said received audio output signal changes to said second state, and outputting an audio timing signal when said audio test signal in said received audio output signal changes to said second state, such that each said audio timing signal is associated with the video timing signal of its respective pair;
  - vi. gating means arranged to receive said gating signals and said video and audio timing signals and to pass said video and audio timing signals only during active picture periods in said received video output signal, as indicated by said gating signals; and
  - vii. timing measurement means for receiving said video and audio timing signals passed by said gating means,

- 29 -

detecting whether there has been any change in said predetermined time relationship between each pair of said video and audio timing signals, detecting whether said video timing signal or said audio timing signal of each associated pair has been delayed with respect to the other, measuring any such delay, providing a measurement signal representative of any such delay, and providing an indication signal representative of whether an audio timing signal has been delayed with respect to the video timing signal of its respective pair or vice-versa.

2. A system according to claim 1, wherein, for each pair of said audio and video test signals, said second periods are coincident in time.

3. A system according to claim 1, wherein, for each pair of said audio and video test signals, said second periods are a predetermined time apart.

4. A system according to claim 1, 2 or 3, wherein said first point is at a transmitter, said second point is at a receiver, and said link is a transmission link between said transmitter and receiver.

5. A system according to claim 4, wherein said transmission link includes a satellite transmission path.

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Amend.  
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- 30 -

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6. A system according to claim 5, wherein said transmission link includes said satellite path for video signals and a terrestrial path for corresponding audio signals.
- 5 7. A system according to any of the preceding claims, wherein said first point is at a transmitter or transmission distribution point, and said second point is at a domestic receiver.
- 10 8. A system according to any of the preceding claims, wherein said first point is upstream of a video processing apparatus and said second point is downstream of said video processing apparatus.
- 15 9. A system according to claim 8, wherein said video processing apparatus comprises a video effects generator.
- 20 10. A system according to any of the preceding claims, wherein said first and second states of said video test signal are represented by contrasting voltage levels.
- 25 11. A system according to any of the preceding claims, wherein said first and second states of said audio test signal are represented by contrasting voltage levels.
12. A system according to any of the preceding claims, wherein said video and audio output signals are transmitted over said link in digital form.

15. A system according to any of the preceding claims, wherein said link comprises a data link for the transmission of video, audio and data signals.

16. For use in a system for synchronising video and audio signals transmitted over a link between a first point and a second point, the apparatus specified in any of the preceding claims for use at said second point.

17. A method of synchronising video and audio signals transmitted over a link between a first point and a second point, the method comprising the steps of:

a. at said first point:

- i. generating a video test signal having a first active picture period of a first state and a second active picture period of a second state which contrasts with said first state;

- ii. generating an audio test signal having a first period of a first state and a second period of a second state which contrasts with said first state, said second periods of said audio and video test signals having a predetermined time

- 32 -

relationship such that each said second period of said audio test signal is associated with a respective said second period of said video test signal, to make a respective pair of associated video and audio signals;

- 5           iii. outputting over said link a video output signal comprising said video test signal; and
- iv. outputting over said link an audio output signal comprising said audio test signal; and

b. at said second point:

- 10           i. receiving said video output signal output over said link by said video output means;
- ii. receiving said audio output signal output over said link by said audio output means;
- 15           iii. generating from said received video output signal and gating signals which represent active picture periods in said received video output signal;
- iv. detecting when said video test signal in said received video output signal changes to said second state, and outputting a video timing signal when said video test signal in said received video output signal changes to
- 20                       said second state;
- v. detecting when said audio test signal in said received audio output signal changes to said second state, and outputting an audio timing signal when said audio test signal in said received audio output signal changes to
- 25                       said second state, such that each said audio timing signal is associated with the video timing signal of its respective pair;

- 33 -

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- vi. receiving said gating signals and gating said video and audio timing signals to pass said video and audio timing signals only during active picture periods in said received video output signal, as indicated by said gating signals; and
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- vii. detecting in said video and audio timing signals passed by said gating means, whether there has been any change in said predetermined time relationship between each pair of said video and audio timing signals, detecting whether said video timing signal or said audio timing signal of each associated pair has been delayed with respect to the other, measuring any such delay, providing a measurement signal representative of any such delay, and providing an indication signal representative of whether an audio timing signal has
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- been delayed with respect to the video timing signal of its respective pair or vice-versa.

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18. A method according to claim 17, carried out by means of a system according to any of claims 1 to 15 or apparatus according to claim 16.

Preliminary  
Amendment  
Cancel.

09/744374

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Russell Mark GODWIN et al

Art Unit:

Application No:

Examiner:

Filed:

For: VIDEO AND AUDIO SYNCHRONISATION

PRELIMINARY AMENDMENT

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please make the following amendments to this application prior to examination thereof.

Rule 1.126

AMENDMENTS

In the Claims:

Claims 4-16 and 18, cancel.

Add new claims as follows:

- 5 ~~19.~~ A system according to claim 1, wherein said first point is at a transmitter, said second point is at a receiver, and said link is a transmission link between said transmitter and receiver.
- 6 ~~20.~~ A system according to claim <sup>5</sup>~~19~~, wherein said transmission link includes a satellite transmission path.
- 7 ~~21.~~ A system according to claim <sup>6</sup>~~20~~, wherein said transmission link includes said satellite path for video signals and a terrestrial path for corresponding audio signals.
- 8 ~~22.~~ A system according to claim 1, wherein said first point is at a transmitter or transmission distribution point, and said second point is at a domestic receiver.
- 9 ~~23.~~ A system according to claim 1, wherein said first point is upstream of a video processing apparatus and said second point is downstream of said video processing apparatus.



Rule  
11/26

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24. A system according to claim <sup>9</sup>~~23~~, wherein said video processing apparatus comprises a video effects generator.

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25. A system according to claim 1, wherein said first and second states of said video test signal are represented by contrasting voltage levels.

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26. A system according to claim 1, wherein said first and second states of said audio test signal are represented by contrasting voltage levels.

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27. A system according to claim 1, wherein said video and audio output signals are transmitted over said link in digital form.

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28. A system according to claim 1, wherein one or both of said video and audio signals is or are transmitted as part of a multiplexed signal.

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29. A system according to claim 1, wherein transmission of said signals over said link is by way of a plurality of different carrier signals.

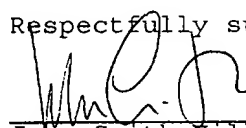
16

30. A system according to claim 1, wherein said link comprises a data link for the transmission of video, audio and data signals.

REMARKS

The above amendments are presented in order to place this application in better condition for examination.

Respectfully submitted,



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